Production Of Antigen Specific Regulatory T-Cells For Therapeutic Use For Autoimmune Diseases

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Technology description

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Autoimmune diseases occur when the host immune system attacks its own cells and tissues. The main form of treatment relies on general suppression of the patient immune system that leaves the patient susceptible to infections and cancer. It has been found that introduction of antigen-specific CD4+CD25+ regulatory T cells (Tregs) can subdue the auto-inflammatory responses. The low abundance of Tregs and difficulties in purification of the antigen-specific Tregs has prevented therapeutic application of their suppressive function.
The researchers atBRI have developed a method to generate and expand antigen-specific Tregs using CD4+CD25- responder T cells isolated from peripheral blood. The resulting Tregs are host derived and host-compatible. The antigens can be changed based on the application and be of self or foreign origin. Ability to select the target antigens allows this method to be adapted for diverse autoimmune diseases and conditions.

Business Opportunity:

Over 50 million Americans are afflicted with autoimmune diseases and this number is on the rise. As a result, the market for autoimmune disease treatments is projected to grow to over $70 billion by 2017. The patient compatible cell based therapies developed using the method described above may be used to prevent and treat wide range of autoimmune diseases, including but not limited to, type 1 diabetes, rheumatoid arthritis, multiple sclerosis, and graft-versus-host disease.

Stage of Development:

The application of this method to produce antigen-specific CD4+CD25+ Tregs cells from human derived CD4+CD25- T-cells has been established. Antigen specificity to both foreign- and self-antigens has been achieved for the human derived cells.

Intellectual Property Position:

BRI currently has issued US and European patents.

Application area

The patient compatible cell based therapies developed using the method described here may be used to prevent and treat wide range of autoimmune diseases, including but not limited to, type 1 diabetes, rheumatoid arthritis, multiple sclerosis, and graft-versus-host disease.

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